The Mathematics Assessment

The NAEP mathematics assessment measures students' ability to solve problems in five mathematics content strands: Number Properties and Operations; Measurement; Geometry; Data Analysis and Probability; and Algebra. Within each of these five content strands, students are asked questions that involve low, moderate, and high mathematical complexity.

The NAEP mathematics assessment includes multiple-choice questions, short-answer constructed-response questions, and extended constructed-response questions. The extended exercises allow students to communicate their ideas and demonstrate the reasoning they used to solve problems. The short-answer and extended-response questions make up approximately 50 percent of student assessment time. The assessment also incorporates the use of calculators, rulers, protractors, and ancillary materials such as spinners and geometric shapes in some parts of the assessment, but not all.

Scientific calculator use is permitted on approximately one-third of the test questions. NAEP provides calculators for all students. For more information regarding the mathematics assessment framework please visit http://nagb.org.

NAEP Mathematics Framework
Distribution of Questions Across Content Strands

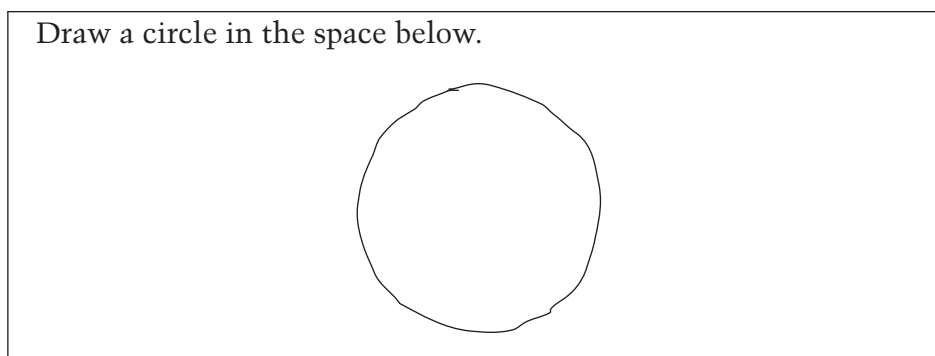|	Grade 8
Number Properties and Operations	20%
Measurement	15%
Geometry	20%
Data Analysis and Probability	15%
Algebra	30%

Mathematics Booklet Directions

This assessment uses many different booklets. Each booklet has different questions. Do not worry if the person next to you is working on questions that do not look like those you are working on.

Read each question carefully and answer it as well as you can. Do not spend too much time on any one question.

For some of the questions you may need to write or draw the answer. You can see how this is done in the example below.

Draw a circle in the space below.

You may be given a calculator to use for at least one part of your booklet. If you are given a calculator, you will have to decide when to use it in each section where its use is permitted. For some questions using the calculator is helpful, but for other questions the calculator may not be helpful. After each question you will be asked to indicate whether you used the calculator.

When you receive the calculator, make sure you know how to use it. There are instructions on the back cover of this booklet to help you. If the calculator does not work or if you do not know how to use it, raise your hand and ask for help.

REMEMBER:

Read each question CAREFULLY.

Fill in only ONE OVAL for each question or write your answer in the space provided.

If you change your answer, ERASE your first answer COMPLETELY.

CHECK OVER your work if you finish a section early.

Do not go past the **STOP** **sign at the end of each section until you are told to do so.**

STOP

Sample Mathematics Questions
Grade 8

1. Of the following, which is the best unit to use when measuring the growth of a plant every other day during a 2-week period?

● Centimeter

Ⓑ Meter

Ⓒ Kilometer

Ⓓ Foot

Ⓔ Yard

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2. Jaime knows the following facts about points A, B, and C.
- Points A, B, and C are on the same line, but might not be in that order.
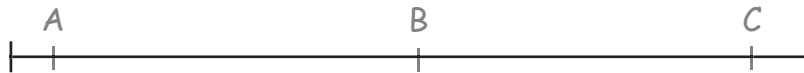- Point C is twice as far from point A as it is from point B.

Jaime concluded that point C is always between points A and B.
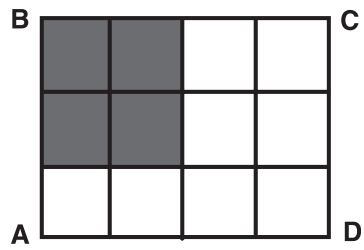
Is Jaime's conclusion correct?

◯ Yes   ● No

In the space provided, use a diagram to explain your answer.

A   B   C

3. In the figure above, what fraction of rectangle ABCD is shaded?

Ⓐ $\dfrac{1}{6}$

Ⓑ $\dfrac{1}{5}$

Ⓒ $\dfrac{1}{4}$

● $\dfrac{1}{3}$

Ⓔ $\dfrac{1}{2}$

STOP

Student Background Questionnaire

General Directions for Grade 8

In the next two sections, you will be asked questions about yourself and your education. The choices for some questions will be written across the page as shown. Fill in the oval for the best answer.

Example 1

	Never or hardly ever	Once or twice a month	Once or twice a week	Almost every day
1. How often do you watch movies on TV?	Ⓐ	Ⓑ	Ⓒ	Ⓓ

You should have filled in the oval below the answer that best tells how often you watch movies on TV.

The choices for some questions will be written down the page as shown. Now read Example 2 and indicate your answer.

Example 2

2. Which event would you prefer to attend?

 Ⓐ basketball game

 Ⓑ car show

 Ⓒ concert

 Ⓓ play

Make your answer mark clear and dark in the oval. If you make a mistake or want to change your answer, be sure to completely erase any unwanted marks.

Do not go past the STOP **sign at the end of each section until you are told to do so.**

If you finish before time is called, go back and check your work on that section only. Use your time carefully. Do as much as you can in each section.

STOP

Student Background Questionnaire

In this section, please tell us about yourself and your family. The section has 13 questions. Mark your answers in your booklet.

VB331330

1. Are you Hispanic or Latino? Fill in **one or more ovals.**

   Ⓐ No, I am not Hispanic or Latino.

   Ⓑ Yes, I am Mexican, Mexican American, or Chicano.

   Ⓒ Yes, I am Puerto Rican or Puerto Rican American.

   Ⓓ Yes, I am Cuban or Cuban American.

   Ⓔ Yes, I am from some other Hispanic or Latino background.

VB331331

2. Which of the following best describes you? Fill in **one or more ovals.**

   Ⓐ White

   Ⓑ Black or African American

   Ⓒ Asian

   Ⓓ American Indian or Alaska Native

   Ⓔ Native Hawaiian or other Pacific Islander

For the rest of the questions in this section, fill in only **one** oval for each question.

3. Does your family get a newspaper at least four times a week?

   Ⓐ Yes

   Ⓑ No

   Ⓒ I don't know.

4. Does your family get any magazines regularly?

   Ⓐ Yes

   Ⓑ No

   Ⓒ I don't know.

5. About how many books are there in your home?

   Ⓐ Few (0–10)

   Ⓑ Enough to fill one shelf (11–25)

   Ⓒ Enough to fill one bookcase (26–100)

   Ⓓ Enough to fill several bookcases (more than 100)

6. Is there a computer at home that you use?

   Ⓐ Yes

   Ⓑ No

7. Is there an encyclopedia in your home? It could be a set of books, or it could be on the computer.

   Ⓐ Yes

   Ⓑ No

   Ⓒ I don't know.

8. About how many pages a day do you have to read in school and for homework?

   Ⓐ 5 or fewer

   Ⓑ 6–10

   Ⓒ 11–15

   Ⓓ 16–20

   Ⓔ More than 20

9. How often do you talk about things you have studied in school with someone in your family?

   Ⓐ Never or hardly ever

   Ⓑ Once every few weeks

   Ⓒ About once a week

   Ⓓ Two or three times a week

   Ⓔ Every day

VB331447

10. How many days were you absent from school in the last month?

Ⓐ None

Ⓑ 1 or 2 days

Ⓒ 3 or 4 days

Ⓓ 5 to 10 days

Ⓔ More than 10 days

VB331451

13. How often do people in your home talk to each other in a language other than English?

Ⓐ Never

Ⓑ Once in a while

Ⓒ About half of the time

Ⓓ All or most of the time

VB330870

11. How far in school did your mother go?

Ⓐ She did not finish high school.

Ⓑ She graduated from high school.

Ⓒ She had some education after high school.

Ⓓ She graduated from college.

Ⓔ I don't know.

VB330871

12. How far in school did your father go?

Ⓐ He did not finish high school.

Ⓑ He graduated from high school.

Ⓒ He had some education after high school.

Ⓓ He graduated from college.

Ⓔ I don't know.

STOP

Student Background Questionnaire

Mathematics—Grade 8

This section has 12 questions. Mark your answers in your booklet. Fill in only **one** oval for each question.

VB543277

1. What math class are you taking this year?

    Ⓐ Geometry

    Ⓑ Algebra II

    Ⓒ Algebra I (one-year course)

    Ⓓ First year of a two-year Algebra I course

    Ⓔ Second year of a two-year Algebra I course

    Ⓕ Introduction to algebra or pre-algebra

    Ⓖ Basic or general eighth-grade math

    Ⓗ Integrated or sequential math

    Ⓘ Other math class

VB543278

2. What math class do you expect to take next year?

    Ⓐ Geometry

    Ⓑ Algebra II

    Ⓒ Algebra I (one-year course)

    Ⓓ First year of a two-year Algebra I course

    Ⓔ Second year of a two-year Algebra I course

    Ⓕ Introduction to algebra or pre-algebra

    Ⓖ Basic or general math

    Ⓗ Integrated or sequential math

    Ⓘ Business or consumer math

    Ⓙ Other math class

    Ⓚ I don't know

3. This year in school, I am in the math course that is right for me.

Ⓐ Strongly disagree

Ⓑ Disagree

Ⓒ Undecided

Ⓓ Agree

Ⓔ Strongly agree

4. How often do you use a computer for math at school?

Ⓐ Never or hardly ever

Ⓑ Once every few weeks

Ⓒ About once a week

Ⓓ Two or three times a week

Ⓔ Every day or almost every day

5. On a typical day, how much time do you spend doing work for math class on a computer? Include work you do in class and for homework.

Ⓐ None

Ⓑ Half an hour or less

Ⓒ About 1 hour

Ⓓ About 2 hours

Ⓔ More than 2 hours

VB543155

6. When you are doing math for school or homework, how often do you use these **different types of computer programs**? Fill in **one** oval on each line.

	Never or hardly ever	Once every few weeks	About once a week	Two or three times a week	Every day or almost every day
a. A spreadsheet program for math class assignments	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
b. A program to practice or drill on math facts (addition, subtraction, multiplication, division)	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
c. A program that presents new math lessons with problems to solve	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
d. The Internet to learn things for math class	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
e. A calculator program on the computer to solve or check problems for math class	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
f. A graphing program on the computer to make charts or graphs for math class	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
g. A statistical program to calculate patterns such as correlations or cross tabulations	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
h. A word processing program to write papers for math class	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
i. A drawing program to work with geometric shapes for math class	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ

VB517159

7. How often do you use these different types of calculators in your math class?

	Never use	Sometimes, but not often	Usually use
a. Basic four-function (addition, subtraction, multiplication, division)	Ⓐ	Ⓑ	Ⓒ
b. Scientific (not graphing)	Ⓐ	Ⓑ	Ⓒ
c. Graphing	Ⓐ	Ⓑ	Ⓒ

8. When you take a math test or quiz, how often do you use a calculator?

Ⓐ Never

Ⓑ Sometimes

Ⓒ Always

HE000659

9. How much do you agree with each of the following statements? Fill in **one** oval on each line.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
a. I like math.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
b. I am good at math.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
c. I understand most of what goes on in math class.	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ

VB595182

10. How hard was this test compared to most other tests you have taken this year in school?

    Ⓐ Easier than other tests

    Ⓑ About as hard as other tests

    Ⓒ Harder than other tests

    Ⓓ Much harder than other tests

VC034559

11. How hard did you try on this test compared to how hard you tried on most other tests you have taken this year in school?

    Ⓐ Not as hard as on other tests

    Ⓑ About as hard as on other tests

    Ⓒ Harder than on other tests

    Ⓓ Much harder than on other tests

VB595184

12. How important was it to you to do well on this test?

    Ⓐ Not very important

    Ⓑ Somewhat important

    Ⓒ Important

    Ⓓ Very important

STOP